CLAIMS

1) Volumetric screw compressor (1; 50), comprising:

- a casing (2) in which it is possible to identify a suction chamber (3) and a delivery chamber (4), between which a pair of screw rotors (5) is included;
- a pan (6) containing oil;
- an adjustment unit (7) suited to adjust the delivery of said compressor (1), comprising:
  - a slide valve (8) externally cooperating with said rotors (5);
  - a fluid-operated actuator (9) constituted by a cylinder (10) in which it is possible to identify an active chamber (11) with a sliding piston (12) connected to said slide valve (8) through a rod (13);
  - a plurality of flow paths (14) made in said cylinder (10) in correspondence with said active chamber (11);
  - at least one oil delivery duct (16) connected to said pan (6);
  - a plurality of oil drain ducts (17, 18, 19) connecting said flow paths (14) of said active chamber (11) to said suction chamber (3);
  - on-off solenoid valves (20, 21) inserted in said drain ducts (17, 18);
  - at least one control unit (23) for said solenoid valves (20, 21),

**characterized in that** said adjustment unit (7) also comprises a flow switching unit (30, 40) that connects said active chamber (11) of said fluid-operated actuator (9) with said pan (6) and with said suction chamber (3) and is constituted by a static flow switch (31, 41) removably associated with a switching solenoid valve (22) electrically connected to said control unit (23), said switching solenoid valve (22) being suited to be associated, alternatively, with static flow switches (31, 41), that are different from each other and make it possible to obtain deliveries of compressed fluid varying discretely or continuously, depending on the open or closed position of said solenoid valves (20, 21, 22) and on the consequent position of said slide valve (8) with respect to said rotors (5).

2) Compressor (1) according to claim 1), **characterized in that** it comprises:

- a first on-off solenoid valve (20) inserted into a first drain duct (17) that connects a first flow path (14a) of said active chamber (11) to said suction chamber (3);
- a second on-off solenoid valve (21) inserted into a second drain duct (18)

that connects a second flow path (14b) of said active chamber (11) to said suction chamber (3),

said flow switching unit (30) comprising said switching solenoid valve (22), associated with a first static flow switch (31) in which the following can be identified:

- a first flow duct (31a) that connects said delivery duct (16) to said first drain duct (17) in an intermediate position (17a) between said first on-off solenoid valve (20) and said cylinder (10);
- a second flow duct (31b) arranged in series with respect to said switching solenoid valve (22) and inserted into a third drain duct (19) that connects a third flow path (14c) of said active chamber (11) to said suction chamber (3),

in order to obtain deliveries of compressed fluid that vary discretely.

3) Compressor (50) according to claim 1), **characterized in that** it comprises:

- a first on-off solenoid valve (20) inserted into a first drain duct (17) that connects a first flow path (14a) of said active chamber (11) to said suction chamber (3);
- a second on-off solenoid valve (21) inserted into a second drain duct (18) that connects a second flow path (14b) of said active chamber (11) to said suction chamber (3),

said flow switch (40) comprising said switching solenoid valve (22) associated with a second static flow switch in which the following can be identified:

- a pair of blind paths (41a, 41b) that intercept a third drain duct (19) that connects a third flow path (14c) of said active chamber (11) to said suction chamber (3);
- a flow duct (41c) arranged in series with respect to said switching solenoid valve (22) to connect said delivery duct (16) to said first drain duct (17) in an intermediate position (17a) between said first on-off solenoid valve (20) and said cylinder (10),

in order to obtain deliveries of compressed fluid that vary continuously.

4) Compressor (1) according to claim 2), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a first configuration (A) in which:

- said first on-off solenoid valve (20) is closed;

- said second on-off solenoid valve (21) is closed;
- said switching solenoid valve (22) is closed,

said first configuration (A) being suited to obtain 100% of the delivery of compressed fluid.

5) Compressor (1) according to claim 2), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a second configuration (B) in which:

- said first on-off solenoid valve (20) is closed;
- said second on-off solenoid valve (21) is closed;
- said switching solenoid valve (22) is open,

said second configuration (B) being suited to obtain 75% of the delivery of compressed fluid.

6) Compressor (1) according to claim 2), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a third configuration (C) in which:

- said first on-off solenoid valve (20) is closed;
- said second on-off solenoid valve (21) is open;
- said switching solenoid valve (22) is closed,

said third configuration (C) being suited to obtain 50% of the delivery of compressed fluid.

7) Compressor (1) according to claim 2), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a fourth configuration (D) in which:

- said first on-off solenoid valve (20) is open;
- said second on-off solenoid valve (21) is closed;
- said switching solenoid valve (22) is closed,

said fourth configuration (D) being suited to obtain 25% of the delivery of compressed fluid.

8) Compressor (50) according to claim 3), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a fifth configuration (E) in which:

- said first on-off solenoid valve (20) is closed;
- said second on-off solenoid valve (21) is closed;
- said switching solenoid valve (22) is open,

said fifth configuration (E) being suited to obtain 100% of the delivery of

compressed fluid.

9) Compressor (50) according to claim 8), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a sixth configuration (F) in which:

- said first on-off solenoid valve (20) is closed;
- said second on-off solenoid valve (21) is opened for a variable lapse of time and then closed again;
- said switching solenoid valve (22) is closed,

said sixth configuration (F) being suited to obtain a value of the delivery of compressed fluid included between 100% and 50%, depending on the opening time of said second solenoid valve (21).

10) Compressor (50) according to claim 8), **characterized in that** said solenoid valves (20, 21, 22) are arranged according to a seventh configuration (G) in which:

- said first on-off solenoid valve (20) is open;
- said second on-off solenoid valve (21) is closed;
- said switching solenoid valve (22) is opened for a variable lapse of time and then closed again;

said seventh configuration (G) being suited to obtain a value of the delivery of compressed fluid included between 100% and 25%, depending on the opening time of said switching solenoid valve (22).

11) Compressor (1; 50) according to any of the claims 2) or 3), **characterized in that** said first (14a), said second (14b) and said third (14c) flow path of said active chamber (11) are positioned at different distances with respect to the bottom (15) of said cylinder (10).

12) Compressor (1; 50) according to claim 11), **characterized in that** said first flow path (14a) is made in the bottom (15) of said cylinder (10) and said second (14b) and third (14c) flow paths are made in the liner of said cylinder (10).

13) Compressor (1; 50) according to claim 12), **characterized in that** said second flow path (14b) is made in an intermediate position between said bottom (15) and said third flow path (14c).

14) Compressor (1; 50) according to claim 12), **characterized in that** said second (14b) and said third (14c) flow paths are aligned.

15) Compressor (1; 50) according to claim 1), **characterized in that**

said control unit (23) is electrically connected to each one of said solenoid valves (20, 21, 22) and comprises electric/electronic means for opening/closing said solenoid valves.

16) Compressor (1; 50) according to claim 2) or 3), **characterized in that** each one of said static flow switches (31, 41) is constituted by shaped metal plates (32, 42), each of said plates being provided with holes (33, 43) for the passage of fastening screws to fix them to said switching solenoid valve (22) and to said casing (2).

17) Compressor (1) according to claim 16), **characterized in that** said shaped metal plates comprise a first plate (32) provided with a first (31a) and a second (31b) flow duct.

18) Compressor (50) according to claim 16), **characterized in that** said shaped metal plates comprise a second plate (42) provided with a flow duct (41c) and with a pair of blind paths (41a, 41b).